

In re Patent Application of  
**Stephen E. Frazier**  
Serial No. 09/923,764  
Filed August 7, 2001

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**Remarks**

Applicant herein responds to the Examiner's concerns as expressed in the pending Office action.

**The Claims Are Patentable Over The Cited References**

The Examiner has rejected claim 64, the single pending independent claim, as obvious in view of US Patent No. 5,288,306 to Aibe et al. taken with the Gai reference, a paper published in the Journal *Carbon*, Vol. 27, No. 1, pp. 41-53, 1989.

The Examiner acknowledges that the Aibe et al. reference does not explicitly use 'granular' carbon in his activated carbon honeycomb invention. Applicant additionally points out that Aibe's invention and teachings are specific to a "a honeycomb with an activated carbon content of not less than about 30%" and which contains various binders. See Aibe et al. at column 5, lines 1-4. Aibe et al., therefore, do not teach the "granular activated carbon" element recited in claim 64.

The Examiner does, however, take the position that in the Aibe et al. reference, "[u]sing granules is an obvious expedient to increase the utility to include gas masks, nuclear stations, etc." Applicant respectfully suggests that, on the contrary, Aibe et al. make it clear that granular activated carbon is not good for adsorbing impurities from a gas because the granules impede the flow rate of gas through the adsorbent. There are numerous references to this point in the Aibe et al. patent. For example, see the following: Abstract, next to last sentence; column 1, lines 41-47; column 2, line 27; column 2, line 39; column 5, lines 10-14; column 6, lines 14-18; column 11, lines 40-47; column 32, lines 38-40; and Table 2, far right column, showing increased flow rate of gas through the honeycomb with fewer cells/inch<sup>2</sup> in the honeycomb. Accordingly, Aibe et al. teach away from the use of "granular" activated carbon, due to its poor flow-through rates.

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Accordingly, Applicant believes that the person skilled in the art would be taught by Aibe et al. to reject the use of granular activated carbon in favor of a more widely dispersed adsorbent, such as Aibe's honeycomb. Applicant, therefore, respectfully asserts that there is no suggestion in the Aibe et al. reference that would lead the skilled to the "process of making an enhanced granular activated carbon" recited in claims 64 or 83. Removing the enhancer from the carbon following treatment is supported in the application as filed at page 8, lines 14-18, in the paragraph directly preceding Example 4.

In addition, the Aibe et al. invention relates to an "activated carbon honeycomb supporting iodine or an and inorganic iodide" as "highly capable of adsorbing and eliminating a large variety of malodorous and harmful components." See Aibe et al. at column 2, lines 55-60. Further, "the present invention provides an activated carbon honeycomb supporting one or more members selected from the group consisting of iodine and an inorganic iodide (hereinafter referred to briefly as an iodine-supporting activated carbon honeycomb unless otherwise specified)." Clearly, Aibe et al. teach an invention which relies on the iodine supported on the carbon matrix as the adsorbent.

In contrast to Aibe et al., in the present invention the iodine may be washed out of the enhanced activated carbon without loss of the enhanced adsorption capacity of the carbon. Applicant theorizes, without wishing to be held to this particular explanation of the invention, that enhancement of the activated carbon in this invention is due to formation of crystals within the pores of the carbon as the carbon is dried following contact with the enhancer. The crystals formed are believed to mechanically push out the sidewalls of the pores, thereby increasing the available surface area in the enhanced carbon. The present invention, therefore, does not rely on the presence of iodine supported on the carbon for its enhanced adsorptive ability.

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The reference by Gai et al. describes a study which attempts to elucidate factors influencing the performance of activated carbon impregnated with potassium iodide for use as radioactive filters in nuclear stations. See Gai et al. at p. 41, first paragraph under Introduction. Accordingly, the reference is not concerned with, and teaches nothing related to a "process of making an enhanced granular activated carbon having an increased adsorptive capacity over plain activated carbon for chlorine dissolved in water."

Iodine impregnated activated carbon filters have been used in nuclear power plants for some time. Applicant encloses as Exhibit A an article by Henning and Schäfer discovered through a search of the internet, which explains the use of these iodine impregnated carbons. Applicant particularly calls the Examiner's attention to the last paragraph on page 4 of 10, where it is explained how these iodine impregnated filters work by "isotope exchange." In other words, the adsorption action of these filters also requires the presence of iodine supported on the activated carbon, as does the Aibe et al. invention.

As both references cited, Aibe et al. and Gai, require that their activated carbons contain iodine in order to function as adsorbents, the combined references would guide the skilled away from the present invention. Accordingly, the combination of references does not make the present invention obvious. For those reasons, Applicant respectfully requests that the Examiner withdraw the obviousness rejection of the claims under 35 USC §103(a).

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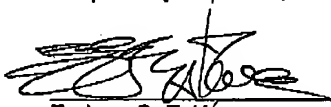
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**Conclusion**

Applicant, therefore, believes the claims are patentable, that the application is in condition for allowance, and respectfully requests such allowance.

If the further prosecution can be facilitated through a telephone conference between the Examiner and the undersigned, the Examiner is respectfully requested to telephone the undersigned at his convenience.

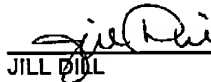
Respectfully submitted,



Enrique G. Estévez  
Reg. No. 37,823  
Allen, Dyer, Doppelt, Milbrath  
& Gilchrist, P.A.  
255 S. Orange Ave., Suite 1401  
P. O. Box 3791  
Orlando, Florida 32802  
(407) 841-2330

**CERTIFICATE OF FILING BY FACSIMILE**

I hereby certify that this correspondence is being filed by facsimile transmission to the USPTO at its central fax number, 703-872-9306, on this 29th day of October, 2004.

  
JILL BILL